

Learning Targets

Solid Geometry

Lesson 1: Solids of Rotation

- I can draw the two-dimensional shape that creates a particular three-dimensional solid when rotated using a given axis.
- I can identify the three-dimensional solid created by rotating a two-dimensional figure using a linear axis.

Lesson 2: Slicing Solids

- I can identify the three-dimensional shape that generates a set of cross sections.
- I can visualize and draw multiple cross sections of a three-dimensional figure.

Lesson 3: Creating Cross Sections by Dilating

- I know that a pyramid's cross sections are dilations of its base with scale factors ranging from 0 to 1.

Lesson 4: Scaling and Area

- I know that when figures are dilated by a scale factor of k , their areas are multiplied by k^2 .

Lesson 5: Scaling and Unscaling

- I can use square root graphs and do calculations to interpret the relationships between scale factors and areas.

Lesson 6: Scaling Solids

- I know that when a solid is dilated by a scale factor of k , its surface area is multiplied by k^2 and its volume is multiplied by k^3 .

Lesson 7: The Root of the Problem

- I can create and describe graphs that show relationships between volumes and scale factors.
- I can work backwards from a volume or surface area scaling to find a scale factor.

Lesson 8: Speaking of Scaling

- I can calculate scale factors for lengths, surface areas, and volumes if I'm given any 1 of the 3 factors.

Lesson 9: Cylinder Volumes

- I can calculate volumes of solids that are composed of cylinders.
- I can explain how finding the volume of a prism relates to finding the volume of a cylinder.

Lesson 10: Cross Sections and Volume

- I know that if two solids have equal-area cross sections at all heights, they have the same volumes.

Lesson 11: Prisms Practice

- I can calculate volumes of right and oblique prisms and cylinders and figures composed of prisms and cylinders.

Lesson 12: Prisms and Pyramids

- I can explain the relationships between pyramids, cones, prisms, and cylinders.

Lesson 13: Building a Volume Formula for a Pyramid

- I can explain why the volume formula for pyramids and cones is $V = \frac{1}{3}Bh$.

Lesson 14: Working with Pyramids

- I can calculate volumes of pyramids and cones.
- I can work backward from a given volume to find possible dimensions of a pyramid or cone.

Lesson 15: Putting All the Solids Together

- I can use the Pythagorean Theorem and trigonometry to help calculate volumes of prisms, cylinders, cones, and pyramids, including solids of rotation.

Lesson 16: Surface Area and Volume

- I can use surface area and volume relationships to solve problems.

Lesson 17: Volume and Density

- I can solve problems involving density and volume.
- I know that the density of an object is the ratio between its mass and its volume.

Lesson 18: Volume and Graphing

- I can use cube root and square root graphs to solve geometric problems.